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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/340,463	06/28/1999	TAKATOSHI OHTA	35.G2420	3937

5514 7590 02/12/2004

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EXAMINER	
TRAN, DOUGLAS Q	
ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 02/12/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/340,463	OHTA, TAKATOSHI	
	Examiner	Art Unit	
	Douglas Q. Tran	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11/20/03 RCE*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. The request filed on 11/20/03 for a Request For Continued Examination (RCE) Pursuant to 37 CFR 1.114.based on the Application Serial No. 09/340,463. An action on the RCE follows.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ohta et al. (US Patent No. 5,621,542) and Onodera (JP 40819036 A).

As to claim 1, Ohta teaches:

Input means (1 in fig. 1A) for inputting image data (col. 2, line 67);

Processing means (col. 2, line 67 to col. 3, line 1) for quantizing error correction data obtained by adding error data to the image data input by the input means (col. 3, lines 1- 4, the error data is distributed to image data) so that data having at least two levels are generated (col. 3, lines 5-7, the data of two levels 0 and 1 is generated by the distributed means); and

Allocating means (i.e., an error distribution table) for allocating the error data generated when the quantization is performed to image data which are not quantized (col. 5, lines 7-10 and 13-14 and col. 3, lines 59-61; the error data from the error distribution table is distributed to

peripheral pixels around a target pixel, so target pixel is quantized and peripheral pixels are not quantized);

Wherein in response to a predetermined level of the error correction data, the processing means outputs, as a result of quantization, a different level from a level resulting from fundamental processing for the predetermined level so as to prevent a pseudocontour form being generated (col. 5, lines 36-46, a predetermined level of the error correction data that is the value of the denominator of the error distribution coefficient is equal to 256 which is processed by multiplying to the input image data of 8 bits. Therefore, the result from the processing would be a level different from the level resulting from fundamental processing for the predetermined level. Col. 6, lines 16-18, from the above processing, the pseudocontour form is prevent because the picture quality in the highlighted portion of the image can be improved).

However, Ohta does not teach of using a different processing from fundamental processing for adding noise components to output data to achieve the different level.

Onodera teaches of using a different processing from fundamental processing for adding noise components to output data to achieve the different level (with respect to the constitution, the inputted original pixel image, which is already quantized, is obtained diffusion output signals "i.e., noise signal" to conduct pseudo half tone display by an error diffusion circuit 11. The error diffusion circuit 11 applies error diffusion processing to the luminescence brightness characteristics of quantity of brightness deviation "i.e., adding noise components" at the levels excluding low levels renewed every moment by a brightness deviation calculating section 24).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the image processing means of Ohta for using a different

processing from fundamental processing for adding noise components to output data to achieve the different level as taught by Onodera. The suggestion for modifying the image processing system of Ohta can be reasoned by one of ordinary skill in the art as set forth above by Onodera because the modified image processing system would increase the efficiency of the systems for processing and outputting the quality of the image output data by applying the error diffusion processing "i.e., adding noise component" to image data at the levels. Such modification of the system would adapt sufficiently to the gradation characteristic also for the data changing every moment and prevent generation of noise.

As to claim 2, Ohta teaches that the allocation means allocates (i.e., an error distribution table), as the error data, the difference between the error correction data and the quantized data having a different level from a level resulting from fundamental processing (col. 5, lines 51-59).

As to claim 3, Ohta teaches that an output means for outputting, based on the data having at least two levels from the processing means, an image in which the sizes of dots are controlled (col. 6, lines 10-15 and col. 4, lines 54-56).

As to claim 4, Ohta teaches that the output means uses ink jet printing to record an image (col. 4, line 54-55).

As to claim 5, Ohta teaches an image processing method comprising:

inputting image data (col. 2, line 67);

quantizing (col. 2, line 67 to col. 3, line 1) error correction data obtained by adding error data to the image data input by the input means (col. 3, lines 1- 4, the error data is distributed to image data) so that data having at least two levels are generated (col. 3, lines 5-7, the data of two levels 0 and 1 is generated by the distributed means); and

allocating (i.e., an error distribution table)the error data generated when the quantization is performed to image data which are not quantized (col. 5, lines 7-10 and 13-14 and col. 3, lines 59-61; the error data from the error distribution table is distributed to peripheral pixels around a target pixel, so target pixel is quantized and peripheral pixels are not quantized);

Wherein in response to a predetermined level of the error correction data, the processing means outputs, as a result of quantization, a different level from a level resulting from fundamental processing for the predetermined level so as to prevent a pseudocontour form being generated (col. 5, lines 36-46, a predetermined level of the error correction data that is the value of the denominator of the error distribution coefficient is equal to 256 which is processed by multiplying to the input image data of 8 bits. Therefore, the result from the processing would be a level different from the level resulting from fundamental processing for the predetermined level. Col. 6, lines 16-18, from the above processing, the pseudocontour form is prevent because the picture quality in the highlighted portion of the image can be improved).

However, Ohta does not teach of using a different processing from fundamental processing for adding noise components to output data to achieve the different level.

Onodera teaches of using a different processing from fundamental processing for adding noise components to output data to achieve the different level (with respect to the constitution, the inputted original pixel image, which is already quantized, is obtained diffusion output signals "i.e., noise signal" to conduct pseudo half tone display by an error diffusion circuit 11. The error diffusion circuit 11 applies error diffusion processing to the luminescence brightness characteristics of quantity of brightness deviation "i.e., adding noise components" at the levels excluding low levels renewed every moment by a brightness deviation calculating section 24).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the image processing means of Ohta for using a different processing from fundamental processing for adding noise components to output data to achieve the different level as taught by Onodera. The suggestion for modifying the image processing system of Ohta can be reasoned by one of ordinary skill in the art as set forth above by Onodera because the modified image processing system would increase the efficiency of the systems for processing and outputting the quality of the image output data by applying the error diffusion processing "i.e., adding noise component" to image data at the levels. Such modification of the system would adapt sufficiently to the gradation characteristic also for the data changing every moment and prevent generation of noise.

As to claim 6, Ohta teaches that, in the allocation step (i.e., an error distribution table which allocating the error data), the difference between the error correction data and the quantized data having a different level from a level resulting from fundamental processing (col. 5, lines 51-59).

As to claim 7, Ohta teaches of outputting, based on the data having at least two levels from the processing means, an image in which the sizes of dots are controlled (col. 6, lines 10-15 and col. 4, lines 54-56).

As to claim 8, Ohta teaches that, in the output step, ink jet printing to record an image (col. 4, line 54-55).

As to claim 9, Ohta teaches an image processing method for allocating, as a quantized error, the difference between an input image density and a quantized image density to surrounding pixels around a pixel of interest, and setting the average of the quantized densities

(i.e., weighting error data would be the average of quantized densities, col. 3, lines 2-3) to be equal to the input image density, the image processing method comprising the steps of:

finding error correction data by adding the input image density and error data allocated from the surrounding pixels (col. 3, lines 58-63: an error data is distributed to the density of an input image to pixels around a target pixel); and

outputting, based on the error correction data obtained in the finding step, error data and predetermined quantized data for the surrounding pixels, which are prestored in a table (col. 3, lines 63-65 and col. 4, lines 1-6),

However, Ohta does not teach, in response to a predetermined level of the error correction data, in the outputting step, a different level from a level resulting from fundamental processing for the predetermined level is output so as to prevent a pseudocontour from being generated, the different level being such as to reflect addition of noise components to the output data to achieve the different level.

Onodera teaches , in response to a predetermined level of the error correction data, in the outputting step, a different level from a level resulting from fundamental processing for the predetermined level is output so as to prevent a pseudocontour from being generated, the different level being such as to reflect addition of noise components to the output data to achieve the different level (with respect to the constitution, the inputted original pixel image, which is already quantized, is obtained diffusion output signals "i.e., noise signal" to conduct pseudo half tone display by an error diffusion circuit 11. The error diffusion circuit 11 applies error diffusion processing to the luminescence brightness characteristics of quantity of brightness deviation "i.e.,

adding noise components" at the levels excluding low levels renewed every moment by a brightness deviation calculating section 24).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the image processing means of Ohta for using a different processing from fundamental processing for adding noise components to output data to achieve the different level as taught by Onodera. The suggestion for modifying the image processing system of Ohta can be reasoned by one of ordinary skill in the art as set forth above by Onodera because the modified image processing system would increase the efficiency of the systems for processing and outputting the quality of the image output data by applying the error diffusion processing "i.e., adding noise component" to image data at the levels. Such modification of the system would adapt sufficiently to the gradation characteristic also for the data changing every moment and prevent generation of noise.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by Ohta et al. (US Patent No. 5,621,542).

As to claim 10, Ohta teaches an image processing apparatus (fig. 1) comprising:

Input means (1 in fig. 1A) for inputting image data (col. 2, line 67);

processing means (col. 2, line 67 to col. 3, line 1) for quantizing error correction data obtained by adding error data to the image data input by the input means (col. 3, lines 1- 4, the error data is distributed to image data), according to a first quantization rule, except when the error correction data has a predetermined level and quantizing the error-correction data of that predetermined level according to a different quantizing rule that results in a different output value from what would be obtained by applying the first rule to error correction data of the predetermined level, in such manner that production of pseudocontours is reduced (col. 3, lines 5-7, the data of two levels 0 and 1 is generated by the distributed means. Col. 5, lines 7-10 and 13-14 and col. 3, lines 59-61; the error data from the error distribution table is distributed to peripheral pixels around a target pixel, so target pixel is quantized and peripheral pixels are not quantized. Col. 5, lines 36-46, a predetermined level of the error correction data that is the value of the denominator of the error distribution coefficient is equal to 256 which is processed by multiplying to the input image data of 8 bits. Therefore, the result from the processing would be a level different from the level resulting from fundamental processing for the predetermined level. Col. 6, lines 16-18, from the above processing, the pseudocontour form is prevent because the picture quality in the highlighted portion of the image can be improved); and

allocation means (i.e., an error distribution table) for allocating the error data generated when the quantization is performed to image data which are not quantized (col. 5, lines 7-10 and 13-14 and col. 3, lines 59-61; the error data from the error distribution table is distributed to peripheral pixels around a target pixel, so target pixel is quantized and peripheral pixels are not quantized).

Response to Arguments

Applicant's arguments filed 11/20/03 have been fully considered but they are not persuasive. Claims 1-10 have been considered but are moot in view of the new ground(s) of rejection. This action is made **non-final**.

Applicant argued in pages 6-8 " the limitations of the cited reference of Ohta can not overcome the new limitations from the amended claims: "using a different processing from fundamental processing for adding noise components to output data to achieve the different level.". In reply, the new recited reference of Onodera discloses, with respect to the constitution, the inputted original pixel image, which is already quantized, is obtained diffusion output signals "i.e., noise signal" to conduct pseudo half tone display by an error diffusion circuit 11. The error diffusion circuit 11 applies error diffusion processing to the luminescence brightness characteristics of quantity of brightness deviation "i.e., adding noise components" at the levels excluding low levels renewed every moment by a brightness deviation calculating section 24. Therefore, the image processing of Onodera, which would be in the same field of endeavor of the image processing of Ohta, would modify to the deficiencies of Ohta. Such modification of the systems would adapt sufficiently to the gradation characteristic also for the data changing every moment and prevent generation of noise.

For the above reasons, it is believed that the cited prior art fully discloses the claimed invention and the rejection stand.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas Q. Tran whose telephone number is (703) 305-4857 or E-mail address is Douglas.tran@uspto.gov.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-4700.

Douglas Q. Tran
Feb. 06, 2004